

## IMAGERY EXPLOITATION ANALYSIS OBJECTIVES

### CHIP SYSTEM ANALYSIS PROJECT

1. INTRODUCTION. This document conveys the background, concept and requirements for a government sponsored study project of a photo chip system as it relates to the imagery exploitation process.

2. CONCEPT.

2.1. Background. Photographic reconnaissance imagery is initially

scanned in the roll film mode; however, when specific areas of interest are located, it is traditional to cut the film into small chips (thereby reducing the integrating of the roll) for further detailed analysis. Chipping the film allows the interpreter to utilize more convenient, simpler, higher quality optical instruments for his analysis than is available for viewing roll film.

Allowing the photo interpreter to utilize chips eliminates the roll film handling problems encountered during detailed analysis, especially when this analysis requires the viewing of stereoscopic pairs. Although many roll film stereoviewers have been developed, their optical quality, human engineering features, and cost effectiveness does not compare to those incorporated in the design of chip

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handling equipment. An additional factor is that basically only one interpreter can utilize any given roll (rolls) at a given time thereby increasing the demand for the number of rolls made available or denying another interpreter of the use of a roll for the analysis of another target. As a consequence, chip interpretation will continue as long as chips can be made.

2.2. Purpose. This study will be to perform an analysis of the photo exploitation process as it pertains to the derivation of a photo chipping procedure as further defined herein to permit management to determine the most effective methods of producing and utilizing photo chips.

2.3. Concept. The contracted organization selected to accomplish this research must be capable of: (1) independent management of the program, (2) provide or utilize leading technical authorities in the field, (3) be responsive to government requirements, (4) be aggressive and effective in achieving the objectives, and (5) furnish forthright technical guidance to the Government. Representatives of the Government involved in this program will maintain an open mind in evaluating any new concept which if success-

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fully pursued, would add to the store of relevant knowledge and advance the state-of-the-art. Organizations engaged in these technical developments are encouraged to present new ideas which they believe will advance the program. It is the intention of the Government to permit freedom for imagination and creativity.

2.4. Scope. This project will be planned on the basis of a six-month effort commencing with the notification of an adequate number of approximately <sup>partly</sup> cleared personnel. Careful utilization of reputable industrial management will be required, as well as obtaining maximum efficiency in all technical aspects. This project is not to directly address itself to the information handling, materials handling and human factors aspects of the problem which are being investigated under separate contracts, unless those contracts do not cover certain aspects unique to this project. The contracted organization selected to accomplish this project will be expected to coordinate and integrate their work with other government contractors and agencies as required to insure maximum effectiveness.

3. ADMINISTRATION. The Government will retain ultimate control of this project. Objectives, costs, priorities, sub-contractors and consultants

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involved in the project come under the purview of the Government, and approval must be obtained before these factors are employed.

4. REQUIREMENTS.

4.1. The primary requirement of this project is to derive an operational concept for the organization and utilization of a cut film chip system from the viewpoint of both interpretation and collateral data base activities. Emphasis will be placed on continuous tone imagery, however, high contrast textual information must also be considered. The major factors to be considered in determining an operational concept shall include but not be limited to:

4.1.1. Determine under what circumstances chips can be most effectively utilized.

4.1.2. Determine how chips can be most effectively utilized.

4.1.3. Examine the merits of standardization with considerations being given to more than one standard.

4.1.4. Examine the merits and techniques of incorporating human readable and machine readable codes on the chips.

4.1.5. Determine the cost effectiveness of different chipping techniques such as sissors cutting from a roll, dye cutting

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from a roll, and selective printing through various reproduction techniques.

4.2. Prepare an error analysis of P.I. mensuration as it pertains to a chip compared with mensuration from a full format frame of photography.

4.3. Prepare an analysis of the theoretical quality that can be obtained in a step and repeat chip printer (with a limited format area) as compared to the quality that can be achieved in continuous roll printers such as the Eastman Kodak Niagra printer. The analysis should express results in terms of resolution, modulation transfer function, dimensional stability, base stability (flatness) and etc.

4.4. Prepare a test and evaluation plan for a chip printer and processor now under development for the Government.

4.5. Where possible, the contractor should make maximum use of Government expertise, particularly in the field of interpretation.

Wherever practical the contractor may establish, supervise, and evaluate tests utilizing Government personnel to derive the necessary information to bring this project to fruition.

4.6. As previously stated, the contractor is not to address the

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problems of digital information handling, materials handling, and

human factors except after it has been determined, through consultation

with the Government's technical representative or appropriate

contractors responsible for Government sponsored projects in these

areas, that a specific aspect of the chip system, as it relates to

the above mention disciplines, is not being covered by those projects.

If specific problems arise as to which program area a problem should

be addressed, the Government retains the prerogative to make the

final determination.

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